MATHEMATICAL AND COMPUTATIONAL SCIENCES
DIVISION COLLOQUIUM

THE ROLE OF GRAPHICS AND VISUALIZATION IN THE DIGITAL LIBRARY OF MATHEMATICAL FUNCTIONS

Bonita Saunders

Mathematical and Computational Sciences Division, NIST

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ABSTRACT

Although virtually unchanged since its initial publication in 1964, the National Bureau of Standards (NBS) Handbook of Mathematical Functions continues to be widely used by the mathematical and scientific community. As a result, NIST is engaged in a large scale project to update and expand the handbook and disseminate it on the World Wide Web as the NIST Digital Library of Mathematical Functions (DLMF). A key feature of the DLMF will be 3D graphics and visualization capabilities that allow a user to interactively examine the unique features of complicated mathematical functions. This talk will focus on the role graphics will play in the DLMF and look at the issues involved in creating effective and informative visualizations. The use of VRML and numerical grid generation techniques to develop the visualizations will be discussed, and the challenges in extending the work to more complex surfaces will be examined. Visualizations from a mockup version of the DLMF will be shown.

For further information, contact: Bill Mitchell (301) 975-3808.